

NISHIDA  
Serial No. 09/986,987

Atty Dkt: 900-407  
Art Unit: 1763

### **REMARKS/ARGUMENTS**

Reexamination of the captioned application is respectfully requested.

#### **A. SUMMARY OF THIS AMENDMENT**

By the current amendment, Applicants basically:

1. Cancel claims 5 and 6 without prejudice or disclaimer.
2. Amend claims 1, 13 and 19 by including therein the subject matter of cancelled dependent claims 5 and 6.
3. Add new claims 21 – 23, dependent upon independent claims 1, 13, and 19 respectively (and supported, e.g., by specification page 5, lines 4 – 6).
4. Requests that the Examiner initial and date the PTO-1449 provided with the IDS filed on February 26, 2004 (see section B infra).
5. Respectfully traverse all prior art rejections.

#### **B. THE FEBRUARY 26, 2004 IDS**

The IDS filed on February 26, 2004 apparently still has not been considered. The Examiner is reminded that the February 26, 2004 needs to be considered and the reference thereof made of record, i.e., it is respectfully requested that the Examiner initial and date the PTO-1449 provided with the IDS filed on February 26, 2004.

#### **C. PATENTABILITY OF THE CLAIMS**

Claims 1-14 and 16-20 stand rejected under 35 USC 102(b) as being anticipated by U.S. Patent Publication 2003/0162407 to Maex et al. Claim 19 stands rejected under 35 USC 102(b) as being anticipated by U.S. Patent 6,440,864 to Kropewnicki et al. Claims 1-20 stand rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 6,440,864 to Kropewnicki et al in view of U.S. Patent 5,453,157 to Jeng. All prior art rejections are respectfully traversed.

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By the current amendments, a ratio ( $W_s/W_b$ ) in a method disclosed in independent claims 1, 13 and 19 is specified as 5 or less. The method wherein the ratio ( $W_s/W_b$ ) is 5 or less has an effect of preventing the change in the film quality and dielectric constant of an insulating film that is caused by ashing of a mask resist provided on the insulating film (see the specification at page 13, line 16 to page 14, line 4). The method of the present invention is advantageous especially in that it is applicable to a low dielectric constant film whose film quality is apt to change due to ashing.

The Examiner directs attention to paragraphs [0018], [00631-10072] and [0085] of Maex. These paragraphs describe a process of etching a low dielectric constant film using a plasma generated from a mixture of  $O_2$  and  $N_2$ . However, no specific removal method of a resist mask is mentioned in these paragraphs. This fact indicates that it is not conditions for ashing the resist mask but conditions for etching the low dielectric constant film that the Examiner mentions on page 2 of the Official Action. Therefore, the Examiner's analysis is incorrect.

From Fig. 8(e) and paragraph [0078], it is understood that a second hard mask 16 is removed simultaneously with the formation of a contact hole 20. However, the hard mask layer of Maex is an inorganic layer such as a silicon oxide layer (see 12th line from the bottom of paragraph [0008] and lines thereafter), which cannot be reduced to ashes. Removal of a hard mask layer, as taught by Maex, does not teach or suggest ashing of a resist mask layer as claimed by Applicant.

Therefore, it is unreasonable to rely on Maex which fails to describe ashing of a resist mask for the rejection of the present claims.

Turning to the alledged combination, Kropewnicki describes a technique to perform ashing of a resist film formed on a substrate using a plasma while an RF electric

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power is applied to the substrate (see, for example, Fig. 6). However, Kropewnicki does not describe a structure that an insulating film such as a low constant dielectric film is provided between a resist film and a substrate.

On the other hand, Jeng describes a method comprising the step of ashing a resist layer formed over a low constant dielectric film.

Neither Kropewnicki nor Jeng describe an ashing method wherein a ratio ( $W_s/W_b$ ) is 5 or less as required by Applicant's independent claims. Applicants' independent claims have an effect for performing ashing of the resist layer without changing the film quality of the insulating film regardless of material of the insulating film underlying the resist layer. The claimed method is advantageous especially when the insulating film is a low constant dielectric film whose film quality is apt to change due to ashing.

Neither Kropewnicki nor Jeng describes any of the above constitution of the independent claims or effect derived therefrom. Therefore, applicants believe that the claims cannot easily be achieved no matter how they are allegedly combined.

#### **D. MISCELLANEOUS**

In view of the foregoing and other considerations, all claims are deemed in condition for allowance. A formal indication of allowability is earnestly solicited.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

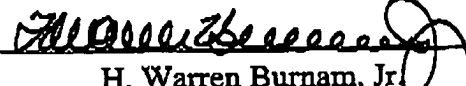
Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

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Respectfully submitted,

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